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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,582	03/31/2001	Alexander V. Reshetov	42390P8654	6822

7590 04/11/2003

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EXAMINER

ARNOLD, ADAM

ART UNIT	PAPER NUMBER
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2697

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DATE MAILED: 04/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,582

Applicant(s)

RESHETOV ET AL.

Examiner

Adam Arnold

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 recites the limitation "the spatial patch" on the third line. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-7, 9, 10, 12, 14-20, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Perry, U.S. Patent No. 6,483,518. Referring to claim 1, Perry discloses a method comprising accessing graphical data for a plurality of nodes (col. 19, line 9) that represent a portion of a surface of a three-dimensional object (col. 8, lines 11-12), the

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graphical data including coordinate system data (col. 8, line 2), appearance data (col. 10, line 31), and displacement data (col. 9, lines 22-25); creating a graphics representation of a surface of the object by rendering the nodes (col. 7, line 60), and presenting on a display (col. 20, line 67).

Referring to claim 2, Perry further discloses appearance and displacement data with an independent value for each of the nodes (col. 10, lines 28-33).

Referring to claim 3, Perry further discloses accessing coordinate systems local to a plurality of nodes (col. 24, line 7).

Referring to claim 4, Perry further discloses accessing coordinate system data that implicitly creates a structural arrangement (col. 8, lines 33-43) and using the node coordinate data for each of the nodes in the structural arrangement (col. 8, lines 59-63).

Referring to claim 5, Perry further discloses determining coordinates by applying a displacement to one of the nodes with a determined position (col. 9, lines 22-25).

Referring to claim 6, Perry further discloses determining coordinates for a displaced node by combining a displacement with coordinates of a node (col. 9, lines 22-25) and projecting the coordinates to a two-dimensional plane (col. 20, line 22).

Referring to claim 7, Perry further discloses determining whether a portion of the nodes lie within a volume by generating a bounding solid for the nodes (col. 8, lines 44-48) and rejecting or accepting the nodes by comparing the bounding solid with a view volume (col. 10, lines 48-53).

Referring to claim 9, Perry further discloses modifying color values (col. 10, line 31) based on lighting calculations for a spatial patch (col. 15, line 42) including

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calculating a normal vector from neighboring nodes (col. 10, line 31; col. 18, lines 48-67; and Figure 17).

Referring to claim 10, Perry further discloses determining four pixels of a quadrilateral that correspond to four nodes from the plurality of nodes, determining an inner pixel contained within the quadrilateral (Figure 25) and interpolating a value for the inner pixel by using neighboring vertices (col. 19, line 39 to col. 20, line 4).

Referring to claim 12, the remarks presented above with respect to claim 1 apply equally to this claim.

Referring to claim 14, the remarks presented above with respect to claim 2 apply equally to this claim.

Referring to claim 15, the remarks presented above with respect to claim 1 apply equally to this claim.

Referring to claim 16, Perry further discloses where the displacement values may vary in magnitude and gradient (col. 10, line 29).

Referring to claim 17, Perry further discloses where a plane where the displacement data indicates a distance relative to the plane (col. 20, lines 22-26).

Referring to claim 18, Perry discloses a system with memory having a spatial patch (col. 15, line 42) comprising color data for the patch (col. 10, line 31), displacement data (col. 9, lines 22-25), coordinate system data (col. 8, line 2), a rendering unit (col. 7, line 60) and a display device (col. 20, line 67).

Referring to claim 19, Perry further discloses multiple spatial patches (col. 15, line 42).

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Referring to claim 20, the remarks presented above with respect to claims 16 and 18 apply equally to this claim.

Referring to claim 22, Perry discloses hardware (col. 8, line 22) and software (col. 7, line 56—"data structures").

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perry in view of Cox, U.S. Patent No. 5,751,931. Perry does not disclose removing a node if it lies outside a view volume represented by a clipping function. Cox discloses a clipping surface which obscures nodes that do not meet a threshold value (col. 2, lines 53-56). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to remove a node if it lies outside a view volume represented by a clipping function. One of ordinary skill in the art would have been motivated to do this because clipping functions are prevalent in graphics display systems.

7. Claims 11, 13, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry. Referring to claim 11, Perry does not disclose where the total number of nodes for a spatial patch that is a multiple of 2^{k+1} . Perry does allow the user the option to select the number of nodes (col. 19, line 10). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have a total of 2^{k+1}

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nodes. One of ordinary skill in the art would have been motivated to do this because the number of nodes of a spatial patch is variable, and Perry allows the user to determine the number.

Referring to claim 13, the remarks presented above with respect to claim 11 apply equally to this claim.

Referring to claim 21, the remarks presented above with respect to claim 11 apply equally to this claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Adam Arnold** whose telephone number is **703-305-8413**. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso, can be reached at (703) 305-3885.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

